

CLAIMS

1. A method of fabricating a polyurethane foam with micro pores comprising the steps of:

- 5 (a) adding a nonionic surfactant into at least one of a first ingredient including an isocyanate group-containing compound and a second ingredient including an active hydrogen group-containing compound;
- 10 (b) agitating and mixing the mixture of the first ingredient and the second ingredient while adding a non-reactive gas thereto;
- 10 (c) discharging the mixture out of a container at a predetermined rate; and
- 15 (d) injecting the discharged mixture into a mold so as to form into a predetermined shape.

2. The method according to claim 1, wherein the steps (b) and (c) are
15 carried out simultaneously.

3. The method according to claim 1, wherein, in the step (b), the non-reactive gas is injected at a rate of 0.1 to 1 L/min per kg of the discharged mixture.

20 4. The method according to claim 3, wherein, in the step (b), the non-reactive gas is injected by a rate of 0.3 to 0.7 L/min per 100 kg of the discharged mixture.

25 5. The method according to claim 1 or 3, wherein, in the step (c), the amount of the discharged mixture is 2 to 20 kg/min.

6. The method according to claim 5, wherein, in the step (c), the amount of the discharged mixture is 2 to 7 kg/min.

5 7. The method according to claim 3 or 6, wherein the step (b) is carried out under a pressure of 2 to 15 bar.

8. The method according to claim 7, wherein the step (b) is carried out under a pressure of 4 to 10 bar.

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9. The method according to any one of claims 1 to 4, 6, and 8, wherein the amount of the added surfactant is 0.1 to 10 parts by weight with respect to 100 parts by weight of the isocyanate group-containing compound.

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10. The method according to claim 9, wherein the content of the surfactant in the mixture in the step (b) is 1 to 3 parts by weight with respect to 100 parts by weight of the isocyanate group-containing compound.

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11. The method according to any one of claims 1 to 4, 6, 8, and 10, wherein the content of the active hydrogen group-containing compound in the mixture in the step (b) is 15 to 50 parts by weight with respect to 100 parts by weight of the isocyanate group-containing compound.

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12. The method according to any one of claims 1 to 4, 6, 8, 10, and 11, wherein the isocyanate group-containing compound is an isocyanate terminated

urethane prepolymer.

13. The method according to claim 9, wherein the nonionic surfactant is a silicone-based nonionic surfactant containing a hydroxyl group, a silicone-based
5 nonionic surfactant containing no hydroxyl group, or a mixture thereof.

14. The method according to any one of claims 1 to 4, 6, 8, 10, 11, and 13,
wherein the mixture in the step (b) further comprises an organic hollow sphere or
an inorganic hollow sphere.

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15. A method of fabricating a polyurethane foam with micro pores comprising the steps of:

(a) adding 0.1 to 10 parts by weight of a silicon-based nonionic surfactant with respect to 100 parts by weight of the isocyanate terminated urethane prepolymer into at least one of a first ingredient including an isocyanate terminated urethane prepolymer and a second ingredient including an active hydrogen group-containing compound;

(b) mixing and agitating the first ingredient and the second ingredient under a pressure of 2 to 15 bar while injecting a non-reactive gas thereinto, and
20 discharging the mixture by a rate of 2 to 20 kg/min to the outside, in which the non-reactive gas is injected by a rate of 0.1 to 1 L/min per kg of the discharged mixture; and

(c) injecting the discharged mixture into a mold for molding.

25 16. The method according to claim 15, wherein, in the step (b), the non-

reactive gas is injected by a rate of 0.3 to 0.7 L/min per kg of the mixture of the first ingredient and the second ingredient, and the pressure is 4 to 10 bar; and
in the step (c), the amount of the discharged mixture is 2 to 7 kg/min.

5 17. The method according to claim 15 or 16, wherein, in the step (a), the silicone-based nonionic surfactant is a silicone-based nonionic surfactant containing a hydroxyl group, a silicone-based nonionic surfactant containing no hydroxyl group, or a mixture thereof.

10 18. A polishing pad fabricated by using a method as claimed in claim 1.

19. The polishing pad according to claim 18, wherein the polishing pad has density of 0.5 to 1.0 g/cm³ and hardness of shore D of 50 to 70.

15 20. A polishing pad fabricated by using a method as claimed in claim 15.

21. A polishing pad fabricated by using a method as claimed in claim 16.

22. A polishing pad for planarizing a substrate surface, comprising a matrix having micro pores formed by non-reactive gases dispersed in an additive such as an isocyanate terminated urethane prepolymer or active hydrogen compound and silicon based surfactant,

25 wherein the micro pores form a continuous surface of the matrix by being exposed in the order approaching the surface in accordance with the polishing degree of the surface of the matrix, and

the proportion of volume of the micro pores with respect to the matrix is in the range of 17 to 59% in the unit volume.

23. A polishing pad as claimed in claim 22, the micro pores included in the
5 matrix is about 20 to 150 μm in size.

24. A polishing pad as claimed in claim 22, the micro pores included in the matrix is about 50 to 80 μm in size.

10 25. A polishing pad as claimed in claim 22, the proportion of volume of the micro pores with respect to the matrix is in the range of 25 to 42 % in the unit volume.